

Dell EMC PowerEdge C6420 and C6400

Technical Guide

Notes, cautions, and warnings

 **NOTE:** A NOTE indicates important information that helps you make better use of your product.

 **CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

 **WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.

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System overview

Introduction

The PowerEdge C6420 optimizes compute, processors, memory and large volume local storage for an IT services platform that can be efficiently and predictably scaled, while drastically reducing complexity. With up to 4 independent hot-swappable 2-socket servers in a very dense 2U chassis, servers can be easily repurposed as workloads change. Numerous options for compute, storage, connectivity and chassis offerings provide flexibility to configure servers for your specific workloads.

- High Performance Computing (HPC)
- High Performance Data Analytics (HPDA)
- Web Scale Applications / Software as a Service (SaaS) / Infrastructure as a Service (IaaS)
- Financial Modeling and High Frequency Trading (HFT)
- Render nodes for Visual Effects Rendering (VFX)
- Private Cloud Infrastructure
- Hyper-converged Infrastructure (HCI)

The PowerEdge C6420, with its flexible configurations, hyper-scale capabilities and overall efficiency, is ideal for modern hyper-converged infrastructures including validated, pre-bundled Dell EMC HPC solutions, VxRail and VxRack, the Dell EMC XC Series.

- Features latest generation Intel® Xeon® SP family processors and up to 56 cores per node
- With an M SKU CPU, each socket can support up to 1.5TB of memory (3TB per node). With non-M SKU CPU, 1.5TB per node
- Offers flexible I/O options including, low-latency InfiniBand™ and next-generation Intel Omni-Path
- Provides new Direct Liquid Cooling options for improved power efficiency

Dell EMC automation and intelligent management means you spend less time on routine maintenance and more focusing on bigger priorities.

- Maximize uptime with proactive diagnostics and automated remediation that is 90% faster.
- Leverage existing consoles with easy integrations for VMware® vSphere®, Microsoft® System Center, and Nagios®.
- Improve productivity with agent-free Dell EMC iDRAC9 improved usability making automated, efficient management part of your routine IT practice.
- Simplify deployment with Dell EMC OpenManage next-generation console and server profiles to fully configure and prep servers in rapid, scalable fashion

Dell EMC provides a comprehensive, cyber-resilient architecture guarding PowerEdge servers from malicious attacks. Security is embedded into every server to prevent unauthorized changes and protect your data.

- Prevent unauthorized configuration changes or malicious firmware attacks with new Configuration Lock-down
- Eliminate unauthorized firmware updates with embedded authentication so only properly signed firmware updates can run.
- Securely repurpose or retire servers with system erase of local storage to ensure data privacy
- Automate updates that check file dependencies and proper update sequence, before deploying them independently from OS/hypervisor

System features

Product comparison

The following table shows the comparison between the PowerEdge C6320 and PowerEdge C6420 per sled:

Table 1. Product comparison with predecessor

Feature	PowerEdge C6320	Dell EMC PowerEdge C6420
Processor	Intel® Xeon® E5-2600v3 and v4 Series	Intel® Xeon® Scalable Family Processor Series
Front Side Bus	Intel® QuickPath Interconnect (QPI)	2x Intel® Ultra Path Interconnect (UPI)
Sockets	2	2
Cores	4, 6, 8, 10, 12, 14, 16, 18, 20, 22 core	4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 28 core
L2/L3 Cache	10MB, 15MB, 20MB, 25MB, 30MB, 35MB, 40MB, or 45MB	8, 11, 16, 16.5, 19, 19.25, 22, 27 20, 22, 24.75, 25, 2730, 33, 36, or 38MB
Chipset	Intel® C612 chipset	Intel® C621 Chipset (Lewisburg)
DIMMs	16 x DDR4 1600MHz/1866/2133MHz/2400MHz	2933MT/s memory available in 16/32/64GB DIMMs 2666MT/s in 8/128GB for Cascade Lake 16x DDR4
Min/Max RAM	4GB / 512GB	- up to 3TB per node when using an M SKU CPU 1.5TB for all others 8GB / 2048GB
Hard Drive Bays	4-node: Up to 6 x 2.5-in or 3 x 3.5-in Hot-swap HDDs	4-node: Up to 6 x 2.5-in or 3 x 3.5-in Hot-swap HDDs
Hard Drive Types	SAS/SATA	SAS/SATA/NVMe
External Drive Bay	None	None
Internal Boot Drive	SATA DOM (64GB) or 1.8" SSD options	1 x 120/240GB M.2 RI SSD Drive 2 x 120/240GB M.2 RI SSD Drives in RAID 1
Embedded Hard Drive Controller	Chipset-based SATA	Chipset-based SATA
Optional Storage Controller	- Non HW RAID: Intel C612 - RAID: All at 6Gbs - LSI 2008 Mezzanine, PERC H330, PERC H730	- Non HW RAID: Intel C621, HBA330 Mezz, 12Gb SAS PCIe LP HBA - RAID: PERC H330 Mezz, PERC H730p Mezz
Availability	Hot-plug HDD and PSU; Redundant PSU	Hot-plug HDD and PSU; Redundant PSU
Server Management	iDRAC8 (Express, Enterprise) editions	BMC (including virtual media and console), iDRAC9 Enterprise
I/O Slots	1U sled: 1 x PCIe x16 Gen3 (half height, half length)+ 1 x PCIe x8 Gen3 (mezzanine)	1U sled: 1 x PCIe x16 Gen3 (half height, half length)+ 1 x PCIe x16 Gen3 OCP 2.0 Mezzanine + 1 PCIe x8 Mezz (for storage controller)

Feature	PowerEdge C6320	Dell EMC PowerEdge C6420
NIC/LOM	2x Intel® 82599ES 10GbE (SFP+)	1 x 1Gb Intel® i350 Ethernet RJ45
USB	1 rear per server	2 x USB 3.0 ports per C6420
Power Supplies	Hot-Swap Redundant, 1400W (80+ Platinum) Redundant, 1600W (80+ Platinum)	Hot-Swap Fault Tolerant Redundant and Non Redundant, 1600W (80+ Platinum), Fault Tolerant Redundant 2000W/2400W
Fans	4 x 60mm, Non-redundant, non-hot Swappable	4x6056 dual-rotor redundant, non-hot swappable fans
Form Factor	2U Rack	2U Rack
Dimension (HxWxD)	(D) 790mm x (H) 86.8mm x (W)448mm	(D) 790mm x (H) 86.8mm x (W)448mm
Maximum Weight	Max: 41 Kg	3.5" Chassis:43.62kg 2.5" Chassis:41.46kg - No BP Chassis :34.56kg

Specifications

Table 2. Technical Specifications

Feature	Specification
Servers per chassis	One to four 2-socket C6420 servers per C6400 chassis
Processor	Intel® Xeon® Scalable Processor Family series
Front side bus	2 x Intel® Ultra Path Interconnect (UPI)
Number of processors	1 or 2
Number of cores	Up to 28 cores
Chipset	Intel C621 chipset
Memory	16 x DDR4 2933MT/s memory available in 16/32/64GB DIMMs 2666MT/s in 8/128GB for Cascade Lake
Min/max RAM	- up to 3TB per node when using an M SKU CPU 1.5TB for all others 8GB / 2048GB
Chassis Configurations	24 x 2.5" Direct Backplane with up to 6 SAS/SATA drives per C6420 sled 24 x 2.5" Expander Backplane with up to 12 SAS/SATA drives per C6420 sled and 2 C6420 sleds per C6400 chassis 24 x 2.5" NVMe Backplane with up to 2 SAS/SATA/NVMe drives and 4 SAS/SATA drives per C6420 sled 12 x 3.5" Direct Backplane with up to 3 SAS/SATA drives per C6420 sled - No Backplane option with no external drives per C6420 sled
Drive types	SAS, SATA, SSD, NVMe SSDs
Onboard drive controllers	Intel C621: SATA HDD / SATA SSD Drives Only
Boot Drive options	1x M.2 120GB/240GB RI SSD drive 2x M.2 120/240GB RI SSD drives in RAID 1
Storage Controllers	- S140 Software RAID - PERC H330 x8 Mezz Card - PERC H730p x8 Mezz Card - SAS HBA330 12Gb SAS HBA x16 PCIe Adapter

Feature	Specification
Availability	• Hot-plug hard drives • Hot-plug redundant power • ECC memory • Single device data correction (SDDC)
Server management	• BMC or iDRAC9 Enterprise with 1 x 1Gbps RJ45 connector • Intel Node Manager 3.0 compliant
I/O slots	• 1 x16 PCIe Gen 3 LP HH riser slot • 1 x16 OCP 2.0 Mezz slot (for network controller) • 1 x8 Mezz slot (for storage controller) • 1 x16 PCIe Gen 3 buried slot (for M.2 Boot device)
I/O adapter options	• 1 Gb Ethernet • 10/25/40/100Gb Ethernet • FDR/EDR InfiniBand • Omni-Path
Embedded NIC	One 1Gb Ethernet for Systems Management and Host Traffic or dedicated for Systems Management
Security	PowerEdge Secure Boot, System Erase, System Lockdown, Drift Detection, BIOS and OS Recovery, Active Directory/LDAP, two-factor authentication (TFA), SSH with Public Key Authentication (PKA), TLS 1.2, SNMP v3, Self-Encrypting and Instant Secure Erase (ISE) Drives, FIPS /TCG; TPM 1.2/2.0, TPM 2.0 China
Video	1 x Mini Display Port
USB	2 x USB 3.0 ports, 1x micro USB CONN type-AB for iDRAC direct
Power supplies	• Dual hot-plug non-redundant high-efficiency 1600W PSU • Dual hot-plug fault tolerant redundant high-efficiency 1600W/2000W/2400W PSUs
Cooling	• Shared cooling with quick-disconnect 4 x 6056 dual rotor redundant fan modules with detectable with PWM control • Direct Contact Liquid Cooling (DCLC)
Chassis	C6400 2U rack-mounted
Rails	Static rails for C6000 family
Chassis Dimensions	(D) 790mm x (H) 86.8mm x (W)482.6mm
Weight	• 3.5" Chassis:43.62kg • 2.5" Chassis:41.46kg • No BP Chassis:34.56kg

Chassis views and features

The C6420 chassis is an ultra-dense 2U enclosure that supports up to four independent two-socket (2S) sleds connected to a direct backplane.

Topics:

- [Chassis views](#)
- [Internal view of the system](#)
- [Locating the information tag of your system](#)

Chassis views

Front panel view and features

The C6420 chassis offers four sled options.

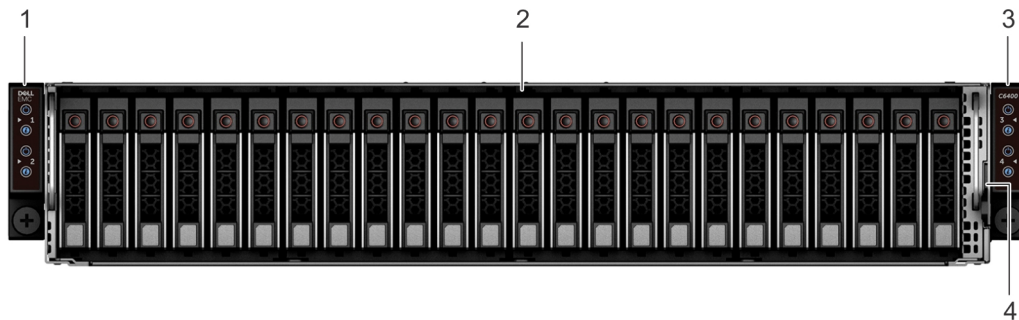


Figure 1. Front panel features and indicators of the 24 x 2.5 inch hard drive enclosure

- | | |
|------------------------|--------------------|
| 1. left control panel | 2. drive bay |
| 3. right control panel | 4. information tag |

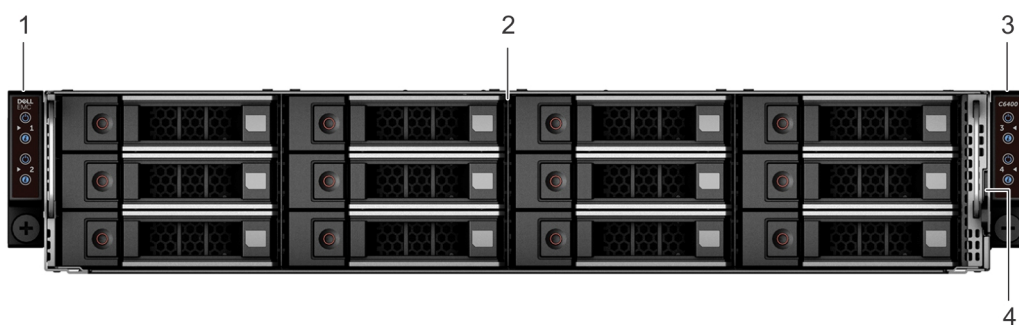


Figure 2. Front panel features and indicators of the 12 x 3.5 inch hard drive enclosure

- | | |
|------------------------|--------------------|
| 1. left control panel | 2. drive bay |
| 3. right control panel | 4. information tag |

System sled enumeration

The enumeration for the motherboards is:

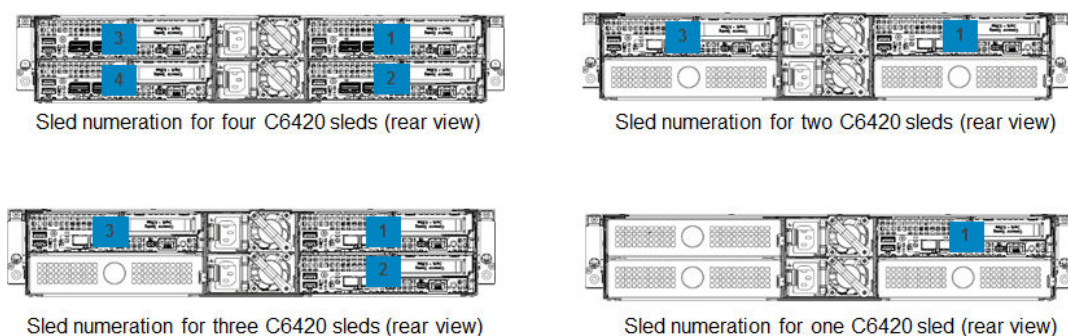


Figure 3. System sled enumeration

1U sled are shipped from the factory in:

- 1- node, 2- node, 3- node, and 4- node configurations only with 2.5 inch backplanes, 2.5 inch with NVMe backplanes and 3.5 inch backplanes.
 - Only 1- node, and 3-node applies to the 2.5 inch expander backplane.
- The empty slots in 1- node, 2- node, and 3- node configurations are filled with the dummy or blank sleds.

Back view

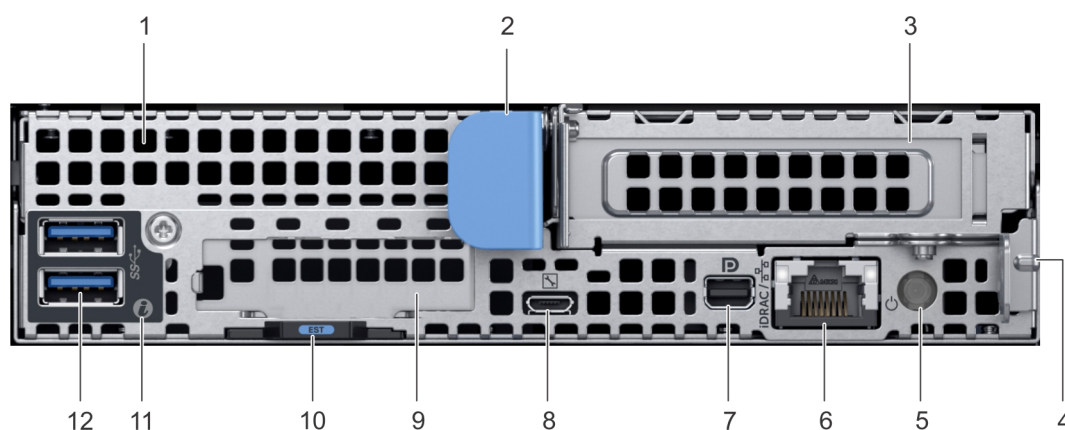


Figure 4. Back view of the PowerEdge C6400 sled

Table 3. Back panel features

Item	Indicator, button, or connector	Icon	Description
1	mezzanine card slot	N/A	Enables you to connect mezzanine expansion cards. For more information, see the Technical specifications section.
2	sled release handle	N/A	Enables you to remove the sled from the enclosure.
3	Low Profile PCIe card slot	N/A	Enables you to connect PCI Express expansion cards. For more information, see the Technical specifications section.
4	sled release lock	N/A	Enables you to remove the sled from the enclosure.

Item	Indicator, button, or connector	Icon	Description
5	rear power button	N/A	Enables you to power on the sled while accessing it from the rear.
6	iDRAC or NIC port	 iDRAC	Enables you to remotely access iDRAC. For more information, see the iDRAC User's Guide at www.dell.com/poweredgemanuals .
7	mini display port		Enables you to connect a display device to the system. For more information, see the Technical specifications section.
8	iDRAC Direct micro USB port		Enables you to connect a portable device to the sled.
9	OCP or OPA card slot	N/A	Enables you to connect Open Compute Project (OCP) or Omni-Path Architecture (OPA) expansion cards. For more information, see the Technical specifications section.
10	EST pull out tab	N/A	This tab has the unique Express Service Code, Service Tag, and MAC address labels.
11	system id indicator and button		The System Identification (ID) button is available on the front and back of the systems. Press the button to identify a system in a rack by turning on the system ID button. You can also use the system ID button to reset iDRAC and to access BIOS using the step through mode.
12	USB 3.0 port (2)		The USB ports are 9-pin and 3.0-compliant. These ports enable you to connect USB devices to the system.

Internal view of the system

 **CAUTION:** This system must be operated with the system cover installed to ensure proper cooling.

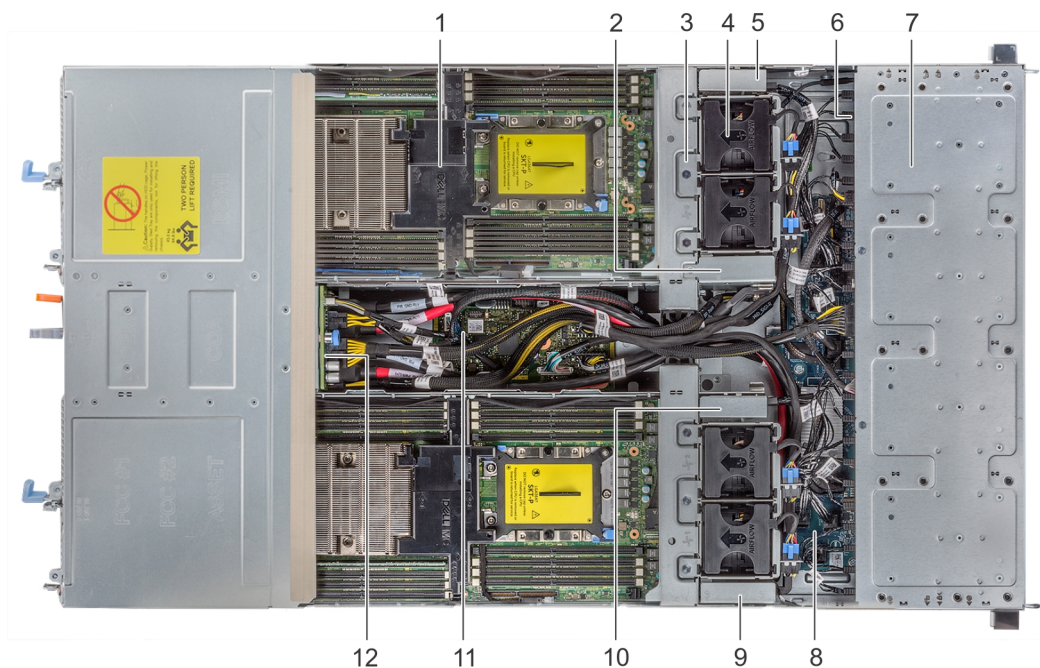


Figure 5. Inside the PowerEdge C6400 enclosure

- | | |
|------------------------------|----------------------------|
| 1. sled | 2. right midplane |
| 3. fan cage (2) | 4. fan (4) |
| 5. right linking board | 6. backplane |
| 7. drive cage | 8. expander board |
| 9. left midplane | 10. left linking board |
| 11. chassis management board | 12. power interposer board |

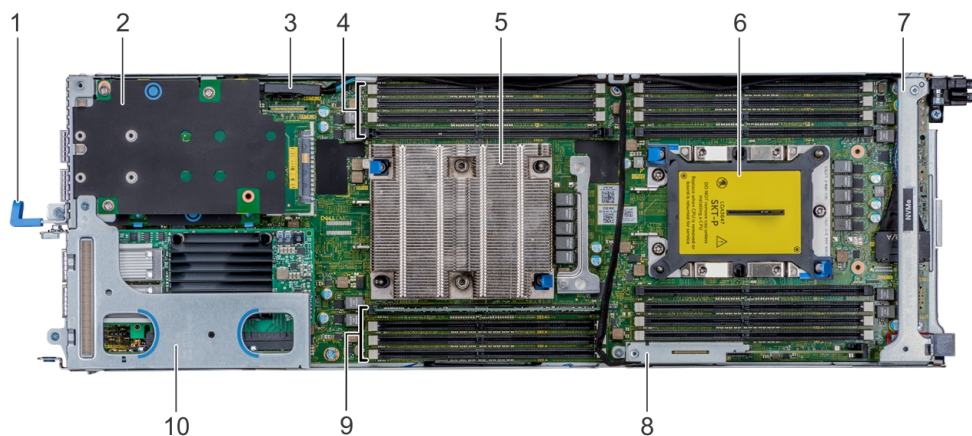


Figure 6. Inside the PowerEdge C6420 sled

- | | |
|------------------------------------|---|
| 1. sled pull handle | 2. mezzanine card |
| 3. SATA connector | 4. memory slot (4) |
| 5. CPU1 processor heat sink module | 6. CPU2 processor heat sink module socket |
| 7. supporting bracket | 8. M.2 SATA riser |
| 9. memory slot (4) | 10. PCIe expansion card riser assembly |

Locating the information tag of your system

You can identify your system using the unique Express Service Code and Service Tag. Pull out the information tag in front of the system to view the Express Service Code and Service Tag. Alternatively, the information may be on a sticker on the back of the system chassis.

The mini Enterprise Service Tag (EST) is found on the back of the system chassis. This information is used by Dell to route support calls to the appropriate personnel.

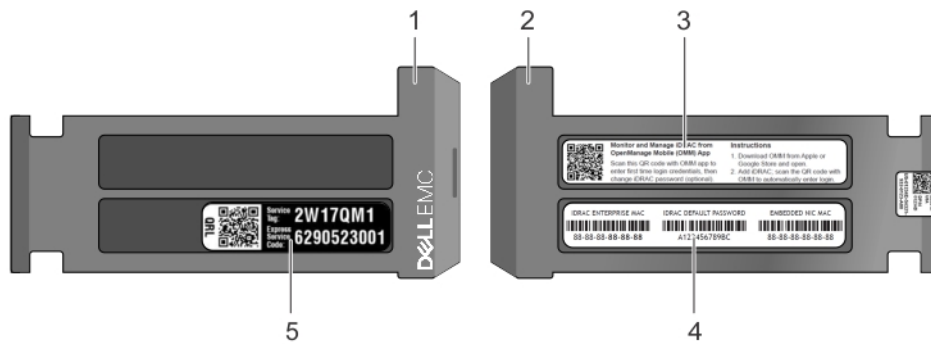


Figure 7. Locating the information tag of your system

1. Information tag (Top view)
2. Information tag (Bottom view)
3. OpenManage Mobile (OMM) label
4. iDRAC MAC address and iDRAC secure password label

NOTE: If you have opted for secure default access to iDRAC, the iDRAC secure default password is available on the back of the system Information tag. This label will be blank, if you have not opted for secure default access to iDRAC, then the default user name and password are root and calvin.

5. Service Tag

Processor

Processor Features

Based on the Intel® 14nm fabrication technology, the Intel® Xeon® processor family introduced a new micro-architecture that provides significant performance advantages and new features targeted for a range of workloads such as: High Performance Computing (HPC), Enterprise applications, Cloud service providers, storage, network applications, Internet of Things (IoT), and many more. The following table summarizes key features of the processor family.

Table 4. Processor Features

Category	Feature	Function
Compute	More Cores	Up to 28C
	Intel® AVX-512	512-bit instructions
	MLC Optimization	Acceleration of enterprise-class and HPC workloads
		Heterogeneous support with converged programming environment
		Higher 'private-local' ratio in cache
		Lower power
	Intel® Ultra Path Interconnect (UPI) (replaces QPI)	Increases bandwidth: up to 10.4 GT/s
Memory & Security	Intel AVX-512 VNNI	512-bit instructions to improve Deep Learning performance
	Memory Capacity and Bandwidth increase	Up to DDR4 2933 MT/s (11% increase) Up to 6 channels (50% increase)
	MPX (Memory Protection Extensions)	Prevents buffer overflow
I/O	Fabric Integration	On package integration of next-generation Intel® Omni-Path Fabric controller
	PCIe Bandwidth	Up to 48 PCIe lanes; 3.0 speed 79 GB/s bi-directional pipeline (from 53 GB/s on BDW)
	Separate Reference with Independent Spread Spectrum Clocking (SRIS)	Eliminates clock in PCIe cables
	MCTP Scaling	256 PCIe buses, up to 8 segments
Storage	Non-Transparent Bridge (NTB) Enhancements	3 full-duplex NTBs and 32 MSI-X vectors
	Crystal Beach DMA (CBDMA)	Adds MMIO -> mem transfer support 2X performance increase vs. prior gen platform
	Intel® Volume Management Device (Intel® VMD)	Manages CPU attached PCIe NVMe SSDs: Provides robust hot-plug capability
		Enclosure Management and Error isolation

Supported processors

Table 5. Supported processors for the PowerEdge C6420

Family	Model	Cores	Clock speed (GHz)	TDP	Maximum memory frequency (GHz)	Maximum frequency (GHz)	Maximum memory (Per CPU)
Platinum	8280	28	2.6	205	2933	2.6	1 TB
Platinum	8276M	28	2.2	165	2933	2.2	2 TB
Platinum	8276	28	2.2	165	2933	2.2	1 TB
Platinum	8270	26	2.6	205	2933	2.7	1 TB
Platinum	8268	24	2.9	205	2933	2.9	1 TB
Platinum	8260M	24	2.3	165	2933	2.3	2 TB
Platinum	8260	24	2.3	165	2933	2.3	1 TB
Platinum	8253	16	2.2	125	2933	2.2	1 TB
Gold	6262V	24	1.9	135	2400	1.9	1 TB
Gold	6254	18	3.1	200	2933	3.1	1 TB
Gold	6252N	24	2.7	150	2933	2.7	1 TB
Gold	6252	24	2.1	150	2933	2.1	1 TB
Gold	6246	12	3.3	165	2933	3.3	1 TB
Gold	6244	8	3.7	150	2933	3.7	1 TB
Gold	6240R	24	2.4	165	2933	2.6	1 TB
Gold	6240M	18	2.6	150	2933	2.6	2 TB
Gold	6240	18	2.6	150	2933	2.6	1 TB
Gold	6238R	28	2.2	165	2933	1.9	1 TB
Gold	6238M	22	2.1	140	2933	2.1	2 TB
Gold	6238	22	2.1	140	2933	2.1	1 TB
Gold	6234	8	3.3	130	2933	3.3	1 TB
Gold	6230R	26	2.1	150	2933	2.1	1 TB
Gold	6230	20	2.1	125	2933	2.1	1 TB
Gold	6226R	16	2.9	150	2933	2.9	1 TB
Gold	6226	12	2.7	125	2933	2.7	1 TB
Gold	6230N	18	2.6	150	2933	2.6	1 TB
Gold	6222V	20	1.8	115	2933	1.8	1 TB
Gold	5220R	24	2.2	150	2933	2.2	1 TB
Gold	5220S	18	2.7	125	2667	2.7	1 TB
Gold	5220	18	2.2	125	2667	2.2	1 TB
Gold	5218R	20	2.1	125	2933	2.1	1 TB
Gold	5218N	16	2.3	110	2667	2.3	1 TB
Gold	5218	16	2.3	105	2667	2.3	1 TB
Gold	6248	20	2.5	150	2933	2.5	1 TB

Family	Model	Cores	Clock speed (GHz)	TDP	Maximum memory frequency (GHz)	Maximum frequency (GHz)	Maximum memory (Per CPU)
Gold	6242	16	2.8	150	2933	2.8	1 TB
Gold	5222	4	3.8	105	2666	3.8	1 TB
Gold	5217	8	3	85	2666	3	1 TB
Gold	5215	10	2.5	85	2666	2.5	1 TB
Gold	5215M	10	2.6	85	2666	2.6	2 TB
Gold	5215L	10	2.6	85	2666	2.6	4.5 TB
Silver	4216	16	2.1	100	2666	2.1	1 TB
Silver	4215R	8	3.2	130	2400	3.2	1 TB
Silver	4215	8	2.5	85	2666	2.5	1 TB
Silver	4214	12	2.2	85	2666	2.2	1 TB
Silver	4214R	12	2.4	100	2400	2.4	1 TB
Silver	4210R	10	2.4	100	2400	2.4	1 TB
Silver	4210	10	2.2	85	2666	2.2	1 TB
Silver	4208	8	2.1	85	2666	2.1	1 TB
Bronze	3206R	8	1.9	85	2400	1.9	1 TB
Bronze	3204	6	1.9	85	2666	1.7	1 TB

 **NOTE:** For more information about Intel Xeon Scalable Processors, see www.intel.com.

Chipset

The PowerEdge C6420 server incorporates the Intel C621 chipset for processor interfacing and for I/O.

Memory

The C6420 supports up to 16 DIMMs, with speeds of up to 2666MT/s. The system supports registered (RDIMMs) and load reduced DIMMs (LRDIMMs) which use a buffer to reduce memory loading and provide greater density, allowing for the maximum platform memory capacity. Unbuffered DIMMs (UDIMMs) are not supported.

The maximum system population is 2TB (16 DIMM slots x128 GB DDR4 LRDIMM), however for best performance the system should be populated to achieve a balanced configuration by populating 1 DIMM per channel. In a balanced configuration with maximum capacity, 12 DIMM slots are populated for a total of 1.5TB memory using 128GB DIMMs.

Topics:

- [Supported memory](#)
- [Memory speed](#)

Supported memory

The following table list the supported memory for the PowerEdge C6420 when using Cascade Lake processor:

Table 6. Memory configuration

Availability	Density	DIMM Type	Dell PN	Configuration	DRAM	Package type	DIMM max speed	Rated voltage
Yes	8GB	RDIMM	1VRGY	1Rx8	8Gb	SDP	2666MT/s in Cascade Lake processor	1.2V
Yes	16GB	RDIMM	TFYHP	2Rx8	8Gb	SDP	2933MT/s	1.2V
Yes	32GB	RDIMM	8WKDY	2RX4	8Gb	SDP	2933MT/s	1.2V
Yes	64GB	RDIMM	W403Y	4Rx4	8Gb	DDP	2933MT/s	1.2V
Yes	128GB	LRDIMM	917VK	8Rx4	8Gb	TSV	2666MT/s in Cascade Lake processor	1.2V

Memory speed

The PowerEdge C6420 system supports memory speeds of 2933MT/s, 2666MT/s, 2400MT/s, 2133MT/s, and 1866MT/s depending on the DIMM types installed and the configuration. All memory on all processors and channels run at the same speed and voltage. By default, this speed will be the highest speed supported by the CPU and the DIMMs. For example both DIMMs and CPUs must be capable of running at 2666MT/s in order for memory to run at 2666MT/s (specific CPU / DIMM configuration required). CPU SKUs in the Platinum category support up to 2666MT/s memory speed while CPU SKUs in Gold and Silver category support up to 2400 MT/s memory speed. The operating speed of the memory is also determined by the maximum speed supported by the processor, the speed settings in the BIOS, and the operating voltage of the system.

The table below lists the memory configuration and performance details for the C6420, based on the quantity and type of DIMMs per memory channel.

Table 7. Memory configuration

DIMM type	DIMM ranking	Capacity	DIMM rated voltage, speed	1 DPC
RDIMM	1R / 2R	8GB, 16GB, 32GB	DDR4 (1.2V), 2666	D: 2666
LRDIMM	4R	64GB	DDR4 (1.2V), 2666	D: 2666
LRDIMM	8R	128GB	DDR4 (1.2V), 2666	D: 2666

Storage

The system enables multiple storage configurations to tune the system configuration for a wide variety of workloads. The C6400 chassis is available in the following configuration types:

- No hard drives in a No-Backplane Configuration
- 24 x 2.5" Direct Backplane configuration with up to 6 SAS/SATA drives per node
- 24 x 2.5" Expander Backplane configuration with up to 12 SAS/SATA drives per node and two nodes per chassis
- 24 x 2.5" NVMe Backplane configuration with up to 6 drives per node out of which two drives can be NVMe drives
- 12 x 3.5" Direct Backplane configuration with up to 3 SAS/SATA drives per node

Topics:

- [Supported drives](#)
- [Storage controller specifications](#)
- [Optical Drives](#)
- [Tape drive](#)
- [Internal storage](#)

Supported drives

The PowerEdge C6420 system supports up to 24 x 2.5" hard disk drives per server node and up to 12 x 3.5" hard disk drives per server node depending on the number of installed nodes and backplane type (max 6 x 2.5" HDDs using 2.5" direct backplane; max 3 x 3.5" HDDs using 3.5" direct backplane).

- Support for 7.2K, 10K and 15K RPM 2.5-inch and 3.5-inch SAS drives
- Support for 7.2K RPM Enterprise 2.5-inch and 3.5-inch SATA

NOTE: For the latest list of drives available on C6420, please always refer to the options available in quoting and ordering tools. This list may not accurately reflect the comprehensive list of all drives available on the C6420 platform.

The following table list the supported NVMe drives:

Table 8. Supported NVMe drives

Description	Interface	Capacity	DPN	Type
SSDR,800G,NVMEPCIE, 2.5,PM1725A	PCIe	800GB	KWH83	MU
SSDR,1.6T,NVMEPCIE,2.5,PM1725A	PCIe	1.6TB	JD6CH	MU
SSDR,3.2,NVMEPCIE,2.5,PM1725A	PCIe	3.2TB	JDMHM	MU
SSDR,3.2,NVME,PCIE,2.5,PM1725	PCIe	3.2TB	99JNC	MU
SSDR,6.4,NVMEPCIE,2.5,PM1725A	PCIe	6.4TB	Y3XT2	MU

The following table shows the supported SSD drives:

Table 9. Supported SSD drives

Description	Interface	Class	Capacity
120GB SSD SATA Boot 6Gbps 512n 2.5in Hot-plug Drive, 1 DWPD, 219 TBW	SATA	RI	120GB

Description	Interface	Class	Capacity
240GB SSD SATA Mix Use 6Gbps 512n 2.5in Hot-plug Drive, SM863a,3 DWPD,1314 TBW	SATA	MU	240GB
400GB SSD SAS Mix Use 12Gbps 512e 2.5in Hot-plug Drive, PM1635a,3 DWPD,2190 TBW	SAS	MU	400GB
400GB SSD SAS Write Intensive 12Gbps 512n 2.5in Hot-plug Drive, PX05SM,10 DWPD,7300 TBW	SAS	WIG	400GB
480GB SSD SAS Mix Use 12Gbps 512n 2.5in Hot-plug Drive, PX05SV,3 DWPD,2628 TBW	SAS	MU	480GB
480GB SSD SATA Read Intensive 6Gbps 512n 2.5in Hot-plug Drive, S3520, 1 DWPD, 945 TBW	SATA	RI	480GB
480GB SSD SATA Mix Use 6Gbps 512n 2.5in Hot-plug Drive, SM863a,3 DWPD,2628 TBW	SATA	MU	480GB
800GB SSD SAS Write Intensive 12Gb 512n 2.5in Hot-plug Drive, PX05SM,10 DWPD,14600 TBW	SAS	WIG	800GB
960GB SSD SAS Read Intensive 12Gbps 512n 2.5in Hot-plug Drive, PX05SR,1 DWPD,1752 TBW	SAS	RI	960GB
960GB SSD SAS Read Intensive 12Gbps 512e 2.5in Hot-plug Drive, PM1633a,1 DWPD,1752 TBW	SAS	RI	960GB
960GB SSD SAS Mix Use 12Gbps 512n 2.5in Hot-plug Drive, PX05SV,3 DWPD,5256 TBW	SAS	MU	960GB
960GB SSD SATA Read Intensive 6Gbps 512n 2.5in Hot-plug Drive, S3520, 1 DWPD, 1750 TBW	SATA	RI	960GB
960GB SSD SATA Mix Use 6Gbps 512n 2.5in Hot-plug Drive, SM863a,3 DWPD,5256 TBW	SATA	MU	960GB
1.6TB SSD SAS Mix Use 12Gbps 512e 2.5in Hot-plug Drive, PM1635a,3 DWPD,8760 TBW	SAS	MU	1.6TB
1.6TB SSD SAS Write Intensive 12Gbps 512n 2.5in Hot-plug Drive, PX05SM,10 DWPD,29200 TBW	SAS	WIG	1.6TB
1.92TB SSD SAS Read Intensive 12Gbps 512n 2.5in Hot-plug Drive, PX05SR,1 DWPD,3504 TBW	SAS	RI	1.92TB
1.92TB SSD SAS Read Intensive 12Gb 512e 2.5in Hot-plug Drive, PM1633a,1 DWPD,3504 TBW	SAS	RI	1.92TB
1.92TB SSD SAS Mix Use 12Gbps 512n 2.5in Hot-plug Drive, PX05SV,3 DWPD,10512 TBW	SAS	MU	1.92TB
1.92TB SSD SATA Mix Use 6Gbps 512n 2.5in Hot-plug Drive, SM863a,3 DWPD,10512 TBW	SATA	MU	1.92TB
1.92TB SSD SATA Read Intensive 6Gbps 512n 2.5in Hot-plug Drive, PM863a,1 DWPD,3504 TBW	SATA	RI	1.92TB
3.84TB SSD SAS Mix Use 12Gbps 512n 2.5in Hot-plug Drive, PX05SV,3 DWPD,10512 TBW	SAS	MU	3.84TB
3.84TB SSD SAS Read Intensive 12Gbps 512n 2.5in Hot-plug Drive, PX05SR,1 DWPD,7008 TBW	SAS	RI	3.84TB
3.84TB SSD SAS Read Intensive 12Gb 512n 2.5in Hot-plug Drive, PM1633a,1 DWPD,7008 TBW	SAS	RI	3.84TB
3.84TB SSD SATA Read Intensive 6Gbps 512n 2.5in Hot-plug Drive, PM863a,1 DWPD,7008 TBW	SATA	RI	3.84TB

The following table list the supported hard drives:

Table 10. Supported hard drives

Description	Form Factor	Interface	Class	Capacity
300GB 10K RPM SAS 12Gbps 512n 2.5in Hot-plug Hard Drive	2.5"	10K	SAS	300GB
300GB 15K RPM SAS 12Gbps 512n 2.5in Hot-plug Hard Drive	2.5"	15K	SAS	300GB
600GB 10K RPM SAS 12Gbps 512n 2.5in Hot-plug Hard Drive	2.5"	10K	SAS	600GB
600GB 15K RPM SAS 12Gbps 512n 2.5in Hot-plug Hard Drive	2.5"	15K	SAS	600GB
900GB 15K RPM SAS 12Gbps 512n 2.5in Hot-plug Hard Drive	2.5"	15K	SAS	900GB
900GB 15K RPM SAS 12Gbps 512e TurboBoost Enhanced Cache 2.5in Hot-plug Hard Drive	2.5"	15K	SAS	900GB
900GB 15K RPM SAS 12Gbps 4Kn 2.5in Hot-plug Hard Drive	2.5"	15K	SAS	900GB
900GB 15K RPM Self-Encrypting SAS 12Gbps 512n 2.5in Hot-plug Hard Drive, FIPS140	2.5"	15K	SAS	900GB
1TB 7.2K RPM NLSAS 12Gbps 512n 2.5in Hot-plug Hard Drive	2.5"	7.2K	NLSAS	1TB
1TB 7.2K RPM SATA 6Gbps 512n 2.5in Hot-plug Hard Drive	2.5"	7.2K	SATA	1TB
1.2TB 10K RPM SAS 12Gbps 512n 2.5in Hot-plug Hard Drive	2.5"	10K	SAS	1.2TB
1.2TB 10K RPM Self-Encrypting SAS 12Gbps 512n 2.5in Hot-plug Hard Drive, FIPS140	2.5"	10K	SAS	1.2TB
1.8TB 10K RPM SAS 12Gbps 512e 2.5in Hot-plug Hard Drive	2.5"	10K	SAS	1.8TB
2TB 7.2K RPM NLSAS 12Gbps 512n 2.5in Hot-plug Hard Drive	2.5"	7.2K	NLSAS	2TB
2TB 7.2K RPM SATA 6Gbps 512n 2.5in Hot-plug Hard Drive	2.5"	7.2K	SATA	2TB
2TB 7.2K RPM Self-Encrypting NLSAS 12Gbps 512n 2.5in Hot-plug Hard Drive, FIPS140	2.5"	7.2K	NLSAS	2TB
1TB 7.2K RPM SATA 6Gbps 512n 3.5in Hot-plug Hard Drive	3.5"	7.2K	SATA	1TB
2TB 7.2K RPM NLSAS 12Gbps 512n 3.5in Hot-Plug Hard Drive	3.5"	7.2K	NLSAS	2TB
2TB 7.2K RPM SATA 6Gbps 512n 3.5in Hot-plug Hard Drive	3.5"	7.2K	SATA	4TB
4TB 7.2K RPM NLSAS 12Gbps 512n 3.5in Hot-plug Hard Drive	3.5"	7.2K	NLSAS	4TB
4TB 7.2K RPM SATA 6Gbps 512n 3.5in Hot-plug Hard Drive	3.5"	7.2K	SATA	4TB
4TB 7.2K RPM Self-Encrypting NLSAS 12Gbps 512n 3.5in Hot-plug Hard Drive, FIPS140	3.5"	7.2K	NLSAS	4TB
8TB 7.2K RPM NLSAS 12Gbps 512e 3.5in Hot-plug Hard Drive	3.5"	7.2K	NLSAS	8TB
8TB 7.2K RPM NLSAS 12Gbps 4Kn 3.5in Hot-Plug Hard Drive	3.5"	7.2K	NLSAS	8TB

Description	Form Factor	Interface	Class	Capacity
8TB 7.2K RPM SATA 6Gbps 512e 3.5in Hot-plug Hard Drive	3.5"	7.2K	SATA	8TB
8TB 7.2K RPM Self-Encrypting NLSAS 12Gbps 512e 3.5in Hot-plug Hard Drive, FIPS140	3.5"	7.2K	NLSAS	8TB
10TB 7.2K RPM NLSAS 12Gbps 512e 3.5in Hot-plug Hard Drive	3.5"	7.2K	NLSAS	10TB
10TB 7.2K RPM SATA 6Gbps 512e 3.5in Hot-plug Hard Drive	3.5"	7.2K	SATA	10TB

Storage controller specifications

RAID configurations are supported for the PowerEdge C6420 with SAS and SATA Drives. See the available RAID options outlined below.

Table 11. Storage controller specifications

Storage Controller	Supported RAID Levels
Embedded C621 chipset	RAID 0, 1, 10, 5
PERC H330 Mezz	RAID 0, 1, 5, 10, 50
PERC H730p Mezz	RAID 0, 1, 5, 6, 10, 50, 60

Optical Drives

The PowerEdge C6400 chassis does not support optical drives. If needed, any external USB 3.0 compliant drive can be used, although no specific vendors have been qualified.

Tape drive

The PowerEdge C6420 does not support an internal tape drive. External storage peripherals are not directly validated with PowerEdge C6420, but customers can use any supported network-based storage options validated with our network and fabric card matrix.

Internal storage

M.2 boot storage

PowerEdge C6420 introduces support for internal boot storage using the M.2 boot device. Following two options are available for M.2 boot devices:

- **Single M.2 Boot Drive connected using SATA** : A single M.2 boot drive can be configured for each C6420 node. The boot device uses a PCIe riser which uses the x16 PCIe buried riser. Note that the M.2 boot device is not a PCIe device, but a SATA device and connects to the SATA port. The SATA port comes from the PCH chipset. This SATA connected M.2 device can work with a single or dual CPU configurations. M.2 capacities available: 240GB
- **Modular BOSS-S1: Dual M.2 Boot Drives with HW RAID connected using PCIe** : Dual M.2 boot drives in RAID 1 can be configured for each C6420 node. The boot device uses a PCIe riser which uses the x16 PCIe buried riser. A hardware RAID controller on the M.2 card configures the two drives in RAID 1. M.2 capacities available: 2x240GB and 2x480GB

Since the M.2 RAID card utilizes PCIe connectivity from CPU2, the M.2 RAID card is only available with dual CPU C6420 configurations. The following table compares the two M.2 boot options:

Table 12. Internal storage configuration

Features	Single M.2 without SW and HW RAID	Modular BOSS-S1: Dual M.2 Drives with HW RAID
HW RAID	No	Yes

Features	Single M.2 without SW and HW RAID	Modular BOSS-S1: Dual M.2 Drives with HW RAID
RAID Mode	NA	RAID 1 from factory Can be configured to No-RAID by the customer
Number of Drives	1	2
CPU 1 Needed	Yes	Yes
CPU 2 Needed	No	Yes

Networking and PCIe

On the PowerEdge C6420, the iDRAC dedicated port and Intel® i350 LOM Media Dependent Interface (MDI) pins are mixed to a single RJ45 on the back of the system. In a dedicated mode, the RJ45 port is dedicated to iDRAC only. In the shared or i350 mode, the port is available for both iDRAC and host communication. Only one port may be enabled at a given time. By default, each system is configured for i350 LOM mode which means that the physical port is shared for host and iDRAC communication.

Network Card-Side Band Interface is also multiplexed between the x16 OCP Mezz Card and the x8 Mezz card slot. Since a network card such as the Intel® x710 OCP Mezz card can be populated in the x16 OCP Mezz slot, iDRAC management can be configured to utilize the ports (e.g. LOM 2 and LOM 3) on the OCP Mezz card.

The following table shows the supported network adapters for the PowerEdge C6420:

Table 13. Network adapters

Description	Type	Speed	DPN	Form Factor	Connectivity
Intel X710 Dual Port 10Gb SFP+ OCP Mezzanine Adapter	Ethernet	10Gbps	T44PH	OCP Mezzanine	SFP+
Intel i350 1Gb Dual Port Ethernet LP PCIe Adapter	Ethernet	1Gbps	8WWC9	LP PCIe Adapter	BASE-T
Broadcom 5720 1Gb Dual Port Ethernet LP PCIe Adapter	Ethernet	1Gbps	557M9	LP PCIe Adapter	BASE-T
Intel Dual Port 10Gb SFP+ LP PCIe Adapter	Ethernet	10Gbps	5N7Y5	LP PCIe Adapter	SFP+
Intel X520 Dual Port 10Gb SFP+ LP PCIe Adapter	Ethernet	10Gbps	942V6	LP PCIe Adapter	SFP+
Intel X550 Dual Port 10Gb BASE-T LP PCIe Adapter	Ethernet	10Gbps	HWWN0	LP PCIe Adapter	BASE-T
Intel X710 Dual Port 10Gb BASE-T LP PCIe Adapter	Ethernet	10Gbps	5N7Y5	LP PCIe Adapter	SFP+
Intel X710 Quad Port 10Gb BASE-T LP PCIe Adapter	Ethernet	10Gbps	08XJ7	LP PCIe Adapter	BASE-T
Broadcom 57402 10Gb SFP+ LP PCIe Adapter	Ethernet	10Gbps	YR0VV	LP PCIe Adapter	SFP+
Broadcom 57414 Dual Port 25Gb LP PCIe Adapter	Ethernet	25Gbps	F4P93	LP PCIe Adapter	SFP28
Broadcom 57416 10Gb BASE-T LP PCIe Adapter	Ethernet	10Gbps	NC5VD	LP PCIe Adapter	BASE-T
SolarFlare SFN8002F Dual Port 10Gb SFP+ LP PCIe Adapter	Ethernet	10Gbps	332MM	LP PCIe Adapter	SFP+
Mellanox 10Gb Dual Port ConnectX-3 LP PCIe Adapter	Ethernet	10Gbps	YHTD6	LP PCIe Adapter	QSFP+
Intel(R) 25GBE 2P XXV710 Adapter	Ethernet	25Gbps	00M95	LP PCIe Adapter	QSFP+
Broadcom Dual Port 25Gbps SFP PCIe Adapter	Ethernet	25Gbps	24GFD	LP PCIe Adapter	QSFP+
QLogic Dual Port 25Gbps SFP LP PCIe Adapter	Ethernet	25Gbps	XV3MV	LP PCIe Adapter	QSFP+
Mellanox Dual Port 25Gbps SFP LP PCIe Adapter	Ethernet	25Gbps	20NJD	LP PCIe Adapter	QSFP+

Description	Type	Speed	DPN	Form Factor	Connectivity
Mellanox Dual Port 40Gbps QSFP LP PCIe Adapter	Ethernet	40Gbps	R3F0N	LP PCIe Adapter	QSFP+
Intel Dual Port 40Gbps QSFP LP PCIe Adapter	Ethernet	40Gbps	8DKFV	LP PCIe Adapter	QSFP+
Mellanox ConnectX-4 Dual Port 100Gb QSFP28 LP PCIe Adapter	Ethernet	100Gbps	HWTYK	LP PCIe Adapter	QSFP28
Mellanox ConnectX3 VPI QSFP+ Single Port FDR LP PCIe Adapter	InfiniBand	56Gbps	79DJ3	LP PCIe Adapter	QSFP+
Mellanox ConnectX-4 Single Port VPI QSFP28 EDR LP PCIe Adapter	InfiniBand/ Ethernet	100Gb	JJN39	LP PCIe Adapter	QSFP28
Mellanox ConnectX-4 Dual Port VPI QSFP28 EDR LP PCIe Adapter	InfiniBand/ Ethernet	100Gb	NNJ2M	LP PCIe Adapter	QSFP28
ConnectX-5 Single Port VPI EDR QSFP28 Adapter	InfiniBand/ Ethernet	100Gb	6FKDT	LP PCIe Adapter	QSFP28
Intel Omni-Path Single Port Host Fabric Adapter 100 Series LP PCIe Adapter	OmniPath	100Gb	N64D3	LP PCIe Adapter	QSFP28

PCIe slots

The PowerEdge C6420 compute sled provides flexible options for IO and storage connectivity using the PCIe slots. The table below summarizes various options available and the standard usage of each slot.

Table 14. PCIe slots

Slot	Description	Fed by CPU	Standard Usage
x8 Mezz PCI-e Riser	One x8 PCIe Gen3 for Mezz (x8 lanes)	CPU 1	Storage Controller
x16 (x8+x8) OCP Mezz Riser	X8 + X8 PCIe Gen3 for OCP Mezz (x16 lanes max)	CPU 1	Network card for host
x16 PCI-e Main Riser (plug-in)	One x16 PCIe Gen3 for LP from CPU 1 (x16 lanes)	CPU 1	Half Height Low Profile PCIe Adapter
x16 buried PCI-e Riser	One x16 PCIe Gen3 for specific form factor (x16 lanes)	CPU 2	M.2 SATA Boot Device / Modular BOSS

Direct contact liquid cooling (DCLC)

The PowerEdge C6420 introduces Direct Contact Liquid Cooling (DCLC) support with our partner CoolIT Systems. DCLC offers customers multiple advantages over air cooling:

- Improves overall data center Power Utilization Efficiency (PUE)
- Improves power efficiency of servers and eliminates need for costly cooling infrastructure such as chillers and CRAC units, thus lowering overall cost and improving TCO
- Improves life of IT infrastructure

NOTE:

- **DCLC is available in select countries with C6420 launch.**
- **DCLC orders must be entered into the LOT tool. DCLC orders will have an extended lead time of about 4-6 weeks.**

The following table describes the three key components of the DCLC:

Table 15. Direct contact liquid cooling (DCLC) key components

Components	Description
 Figure 8. CPU cold plate loop	The CoolIT Systems cold plates, specifically designed for use with Intel Xeon, are passive CPU Cooling solutions managed by centralized pumping architectures. These passive cold plate assemblies replace heatsinks and are purpose-designed to accommodate C6420 compute sleds. For C6420 DCLC solution, the cold plates are sold and supported by Dell EMC.
 Figure 9. Rack Manifold	Coolant tubes come out of each sled and connect to a manifold unit. Made with reliable stainless steel and 100% non-drip quick disconnects, Rack Manifolds can be arranged horizontally or vertically for a manual connection at the front or back of the rack. For C6420 DCLC solution, the manifolds are sold (via S&P) and supported by CoolIT or Authorized Service Provider.
 Figure 10. Heat Exchanger	While Server Modules and Manifold Modules are installed with each system and are local to the rack, the appropriate heat rejection method may vary. CoolIT Systems Rack DCLC product line offers a variety of Heat Exchange Modules depending on load requirements and availability of facility water, including CHx (Liquid-to-Liquid), AHx (Liquid-to-Air) and custom options. For C6420 DCLC solution, the heat exchangers are sold (via S&P) and supported by CoolIT or Authorized Service Provider.

Liquid cooled sled

A PowerEdge C6420 sled can be configured from the factory to use Liquid Cooling instead of Air Cooling. Processor Thermal Configuration Option can be configured in the ordering tools to select Direct Liquid Cooling. CPU Cold Plates are installed in the factory and the system is shipped with cold plates installed in each sled, with each sled placed in the chassis. Dell EMC provides support and warranty for Cold Plates.

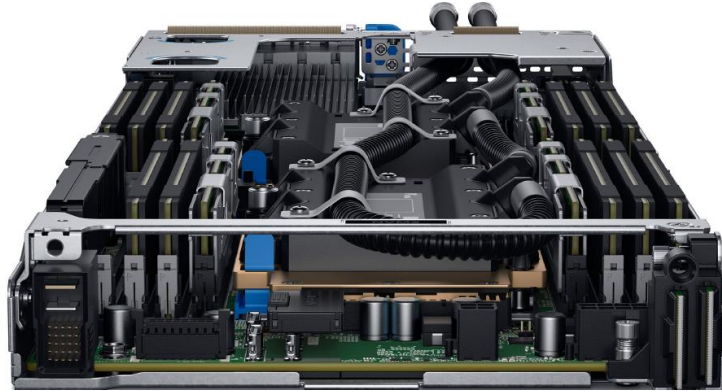


Figure 11. Front view of the C6420 liquid cooled sled

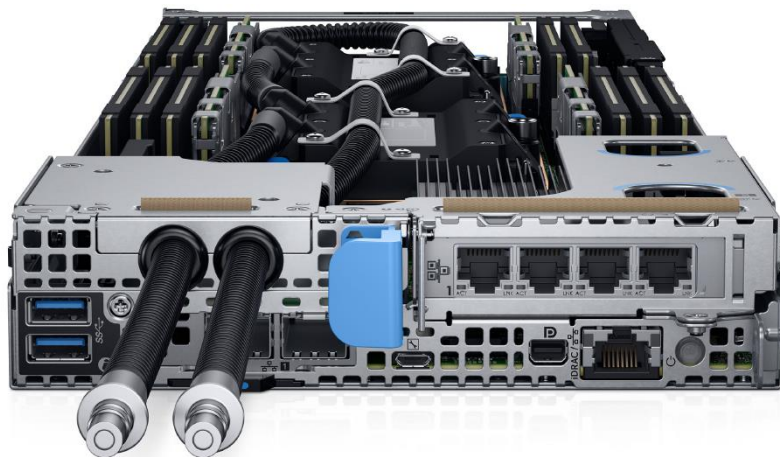


Figure 12. Back view of the C6420 liquid cooled sled

Power, thermal and acoustics

Power

Energy Smart power supplies have intelligent features, such as the ability to dynamically optimize efficiency while maintaining availability and redundancy. Also featured are enhanced power- consumption reduction technologies, such as high- efficiency power conversion and advanced thermal- management techniques, and embedded power- management features, including high- accuracy power monitoring.

The PowerEdge C6400 chassis power supply subsystem is formed with two AC-DC redundant power supplies. The power supply provides +12V and +12Vaux for redundant design. There are several voltage regulators in the system to supply different voltage levels needed by different logic devices.

The following Power Supply configuration options are available on C6400 chassis:

- Dual, Hot-plug Fault Tolerant Redundant Power Supply(1+1),1600W, 250Volt
- Dual, Hot-plug Fault Tolerant Redundant Power Supply, 2000W
- Dual, Hot-plug Fault Tolerant Redundant Power Supply , 2400W
- Dual, Hot-plug Fully Redundant Power Supply(1+1),1600W, 250Volt
- Dual, Hot-plug Fully Redundant Power Supply, 2000W
- Dual, Hot-plug Fully Redundant Power Supply , 2400W

The following tables shows the power supply specifications and power efficiency.

Table 16. 1600W PSU Specification

Attribute	Value
Configuration Options	1+1 Fault Tolerant Redundant (from factory) 2+0 Non Redundant (customer configurable)
80 Plus	Platinum
Power Factor Correction	Active
FCC Classification	Class A
Max Output Current	131.15A (180-264Vac) 65.57A (90-140Vac)
Input Voltage Range	90-264V AC, 47-63Hz
Iin 100 - 240VAC for rating on safety label	10.0 Amps
Initial Inrush Current	25 Amps (peak)
Secondary Inrush Current	25 Amps (peak)

Table 17. 1600W PSU Efficiency

	10% Load	20% Load	50% Load	100% Load
Power Supply efficiency at 115Vac	N/A	85%	88%	90%
Power Supply efficiency at 230Vac	87%	90%	94%	91%

Table 18. 2000W PSU Specifications

Attribute	Value
Configuration Options	1+1 Fault Tolerant Redundant
80 Plus	Platinum

Attribute	Value
Power Factor Correction	Active
FCC Classification	Class A
Max Output Current	163.93A (180-264Vac) 81.97A (90-140Vac)
Input Voltage Range	90-264V AC, 47-63Hz
Iin 100 - 240VAC for rating on safety label	11.5 Amps
Initial Inrush Current	25 Amps (peak)
Secondary Inrush Current	45 Amps (peak)

Table 19. 2000W PSU Efficiency

	10% Load	20% Load	50% Load	100% Load
Power Supply efficiency at 115Vac	N/A	88%	92%	91%
Power Supply efficiency at 230Vac	89%	93%	94%	91%

Table 20. 2400W PSU Specifications

Attribute	Value
Configuration Options	1+1 Fault Tolerant Redundant
80 Plus	Platinum
Power Factor Correction	Active
FCC Classification	Class A
Max Output Current	196.72A (180-264Vac) 114.75A (90-140Vac)
Input Voltage Range	90-264V AC, 47-63Hz
Iin 100 - 240VAC for rating on safety label	16.0 Amps
Initial Inrush Current	35 Amps (peak)
Secondary Inrush Current	45 Amps (peak)

Table 21. 2400W PSU Efficiency

	10% Load	20% Load	50% Load	100% Load
Power Supply efficiency at 115Vac	82%	88%	92%	91%
Power Supply efficiency at 230Vac	89%	93%	94%	91.50%

Acoustics

The PowerEdge C6420 has been tested in two typical configurations. The following tables summarize the configuration and acoustical performance of the C6420. Each configuration has been tested according to Dell EMC acoustical standards for rack-mounted servers.

Table 22. Acoustical Performance of C6420

Configuration	Typical	Typical
CPU	Intel® Xeon® Gold 6130	Intel® Xeon® Gold
CPU	125 W	105 W

Configuration	Typical	Typical
CPU Quantity per	2	2
Memory	16GB, 2667MHz,	8GB, 2667MHz,
DIMM Quantity per	12	12
Backplane	2.5" x 24	3.5" x 12
HDD	10K RPM SAS	7.2K RPM SAS
HDD Quantity per host chassis	8	16
PSU	1600 W	1600 W
PSU Quantity per host chassis	2	2
PERC	H330 Mini	H330 Mini
PCI	Dual Port 10Gbe	Single port EDR IB

Table 23. Acoustical Performance: Idle/ Operating at 25 °C Ambient

Configuration	Typical	Typical
LwA-UL	Idle	7.2
	Operating	7.3
LpA (dBA)	Idle	58
	Operating	58
Not objectionable tones under conditions above		
LwA-UL (Bels)	8.5	8.5
LpA	71	71

Table 24. Acoustical Performance: Max. Loading at 35 °C Ambient

Configuration	Typical	Typical
LwA-UL (Bels)	9.0	9.0
LpA	75	75

Supported operating systems

The following lists the supported operating systems for the PowerEdge C6420:

- RedHat Enterprise Linux 6.9 Server x86_64
- RedHat Enterprise Linux 7.3 Server x86_64
- Novell SuSE Linux Enterprise Server 11 (with PLDP) SP4 x86_64
- Novell SuSE Linux Enterprise Server 12 SP2 x86_64
- Microsoft Windows Server 2016, Server 2012 R2
- Ubuntu 16.04 LTS
- VMware vSphere 2016 U1 (ESXi 6.5 U1), 2015 U3 (ESXi 6.0 U3)
- Citrix Xen Server 7.1.x

 **NOTE:** The C6420 does not provide factory install options for any operating system.

Dell EMC OpenManage systems management

Dell EMC OpenManage Portfolio

Simplifying hardware management through ease of use and automation

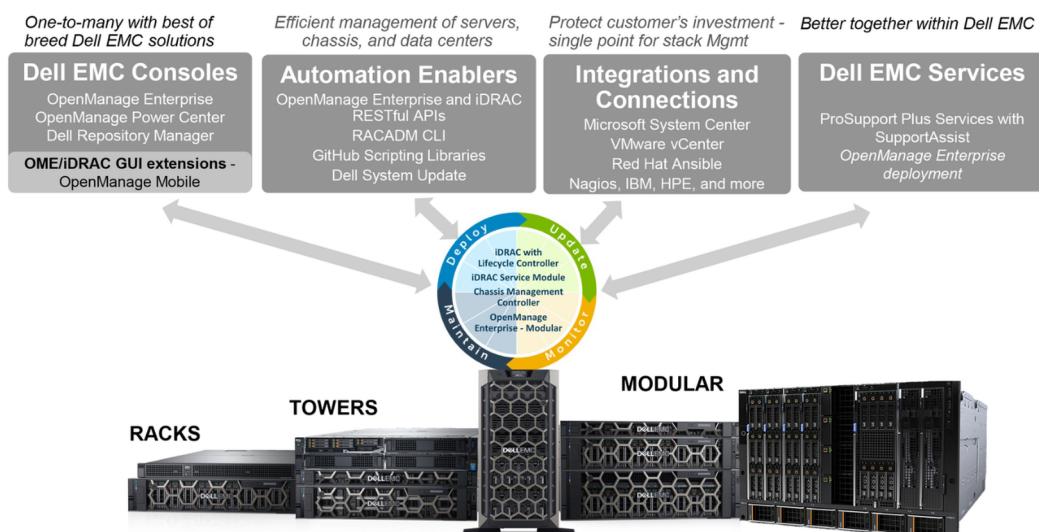


Figure 13. Dell EMC OpenManage Portfolio

Dell EMC delivers management solutions that help IT Administrators effectively deploy, update, monitor, and manage IT assets. OpenManage solutions and tools enable you to quickly respond to problems by helping them to manage Dell EMC servers effectively and efficiently; in physical, virtual, local, and remote environments, operating in-band, and out-of-band (agent-free). The OpenManage portfolio includes innovative embedded management tools such as the integrated Dell Remote Access Controller (iDRAC), Chassis Management Controller and Consoles like OpenManage Enterprise, OpenManage Power Manager plug in, and tools like Repository Manager.

Dell EMC has developed comprehensive systems management solutions based on open standards and has integrated with management consoles that can perform advanced management of Dell hardware. Dell EMC has connected or integrated the advanced management capabilities of Dell hardware into offerings from the industry's top systems management vendors and frameworks such as Ansible, thus making Dell EMC platforms easy to deploy, update, monitor, and manage.

The key tools for managing Dell EMC PowerEdge servers are iDRAC and the one-to-many OpenManage Enterprise console. OpenManage Enterprise helps the system administrators in complete lifecycle management of multiple generations of PowerEdge servers. Other tools such as Repository Manager, which enables simple yet comprehensive change management.

OpenManage tools integrate with systems management framework from other vendors such as VMware, Microsoft, Ansible, and ServiceNow. This enables you to use the skills of the IT staff to efficiently manage Dell EMC PowerEdge servers.

Topics:

- [Server and Chassis Managers](#)
- [Dell EMC consoles](#)
- [Automation Enablers](#)
- [Integration with third-party consoles](#)
- [Connections for third-party consoles](#)
- [Dell EMC Update Utilities](#)
- [Dell resources](#)

Server and Chassis Managers

- Integrated Dell Remote Access Controller (iDRAC)
- iDRAC Service Module (iSM)

Dell EMC consoles

- Dell EMC OpenManage Enterprise
- Dell EMC Repository Manager (DRM)
- Dell EMC OpenManage Enterprise Power Manager plugin to OpenManage Enterprise
- Dell EMC OpenManage Mobile (OMM)

Automation Enablers

- OpenManage Ansible Modules
- iDRAC RESTful APIs (Redfish)
- Standards-based APIs (Python, PowerShell)
- RACADM Command Line Interface (CLI)
- GitHub Scripting Libraries

Integration with third-party consoles

- Dell EMC OpenManage Integrations with Microsoft System Center
- Dell EMC OpenManage Integration for VMware vCenter (OMIVV)
- Dell EMC OpenManage Ansible Modules
- Dell EMC OpenManage Integration with ServiceNow

Connections for third-party consoles

- Micro Focus and other HPE tools
- OpenManage Connection for IBM Tivoli
- OpenManage Plug-in for Nagios Core and XI

Dell EMC Update Utilities

- Dell System Update (DSU)
- Dell EMC Repository Manager (DRM)
- Dell EMC Update Packages (DUP)
- Dell EMC Server Update Utility (SUU)
- Dell EMC Platform Specific Bootable ISO (PSBI)

Dell resources

For additional information about white papers, videos, blogs, forums, technical material, tools, usage examples, and other information, go to the OpenManage page at www.dell.com/openmanagemanuals or the following product pages:

Table 25. Dell resources

Resource	Location
Integrated Dell Remote Access Controller (iDRAC)	www.dell.com/idracmanuals
iDRAC Service Module (iSM)	www.dell.com/support/article/sln310557
OpenManage Ansible Modules	www.dell.com/support/article/sln310720
OpenManage Essentials (OME)	www.dell.com/support/article/sln310714

Resource	Location
OpenManage Mobile (OMM)	www.dell.com/support/article/sln310980
OpenManage Integration for VMware vCenter (OMIVV)	www.dell.com/support/article/sln311238
OpenManage Integration for Microsoft System Center (OMIMSSC)	www.dell.com/support/article/sln312177
Dell EMC Repository Manager (DRM)	www.dell.com/support/article/sln312652
Dell EMC System Update (DSU)	www.dell.com/support/article/sln310654
Dell EMC Platform Specific Bootable ISO (PSBI)	Dell.com/support/article/sln296511
OpenManage Connections for Partner Consoles	www.dell.com/support/article/sln312320
OpenManage Enterprise Power Manager	www.dellemc.com/solutions/openmanage/power-management.htm
OpenManage Integration with ServiceNow (OMISNOW)	Dell.com/support/article/sln317784

 **NOTE:** Features may vary by server. Please refer to the product page on www.dell.com/manuals for details.

Appendix A. Additional specifications

Chassis dimensions

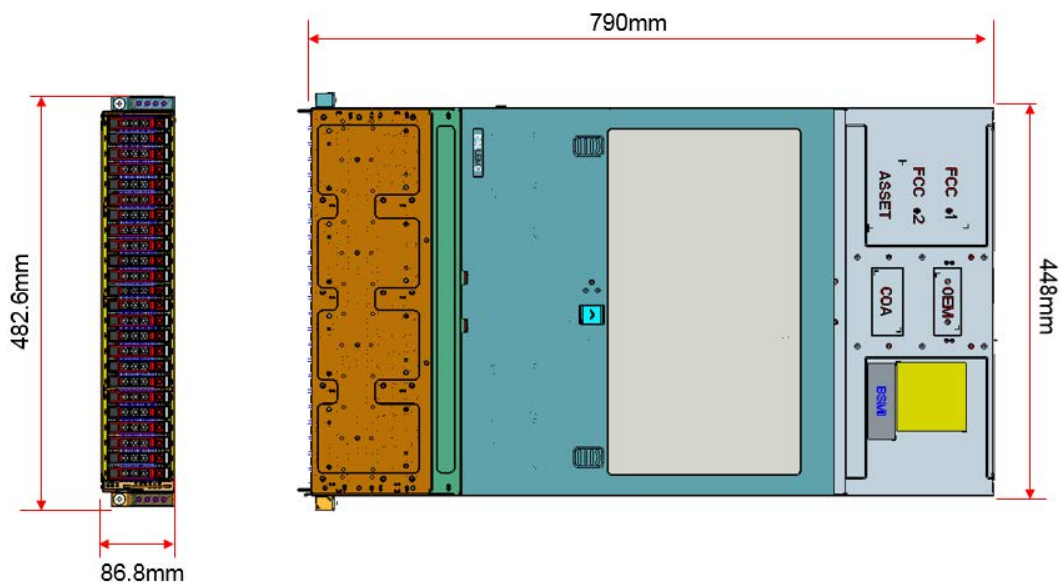


Figure 14. Chassis dimension of the PowerEdge C6420

Table 26. Chassis dimension of the PowerEdge C6420

Description	Dimension
Depth	790mm
Height	86.8mm
Width	448mm

Chassis weight

This section describes the weight of the system.

Table 27. Chassis weight

Configuration	Weight description
Weight (maximum configuration)	3.5" Direct Backplane Chassis: 43.62 Kg 2.5" Direct/Expander/NVMe Backplane Chassis: 41.46 Kg - No Backplane Chassis: 34.56 Kg
Weight (empty)	Chassis – 5.58 Kg / 12.31 lbs

Video

PowerEdge C6420 system Integrated Dell Remote Access Controller (iDRAC) incorporates an integrated video subsystem, connected to the south bridge via PCI Express and internal PCIe Switch and PCIe to PCI Bridge. The graphics controller is the 2D Matrox G200. The video frame buffer (16MB) is contained within the iDRAC RAM (256MB) device.

PowerEdge C6420 supports the following 2D graphics video modes:

Table 28. Video modes

Operating system	Driver	Hot plug support	Supported Resolutions	Color Depth (bits)	Frequencies (Hz)
Windows	Matrox Driver	Yes	640x480	8, 16, 24	60, 72
			800x600	8, 16, 24	60, 75, 85
			1024x768	8, 16, 24	60, 75, 85
			1152x864	8, 16, 24	60, 75, 85
			1280x1024	8, 16, 24	60, 75
Windows	Windows Native Driver	No	640x480	8, 16, 24	60, 72
			800x600	8, 16, 24	60, 75, 85
			1024x768	8, 16, 24	60, 75, 85
			1152x864	8, 16, 24	60, 75, 85
			1280x1024	8, 16, 24	60, 75
Windows	Matrox Driver	No	640x480	8, 16, 24	60, 72
			800x600	8, 16, 24	60, 75, 85
			1024x768	8, 16, 24	60, 75, 85
			1152x864	8, 16, 24	60, 75, 85
			1280x1024	8, 16, 24	60, 75
Linux	Linux Native Driver	No	640x480	8, 16, 24	60, 72
			800x600	8, 16, 24	60, 75, 85
			1024x768	8, 16, 24	60, 75, 85
			1152x864	8, 16, 24	60, 75, 85
			1280x1024	8, 16, 24	60, 75
Avocent integrated vKVM	N/A	N/A	640x480	8, 16, 24	N/A
			800x600	8, 16, 24	N/A
			1024x768	8, 16, 24	N/A
			1152x864	8, 16, 24	N/A
			1280x1024	8, 16, 24	N/A
BIOS	N/A	No	640x480	8	60
UEFI Graphical Mode	Matrox UEFI	No	640x480	8, 16, 24	60, 72
			800x600	8, 16, 24	60, 75, 85
			1024x768	8, 16, 24	60, 75, 85
UEFI Text Mode	Matrox UEFI	No	640x480	8, 16, 24	60, 72
			800x600	8, 16, 24	60, 75, 85
			1024x768	8, 16, 24	60, 75, 85

USB

The PowerEdge C6420 supports the following USB 3.0 compliant devices via its two rear ports:

- DVD (bootable)
- USB key (bootable)
-
- Keyboard (only one USB keyboard is supported)
- Mouse (only one USB mouse is supported)

Environmental specifications

Please refer to the [Environmental Specifications](#) for detailed information.

Acoustics

Please refer to the [Acoustics](#) section for more information.

Temperature specifications

The following table shows the temperature specifications:

Table 29. Temperature specifications

Temperature	Specifications
Storage	-40°C to 65°C (-40°F to 149°F)
Continuous operation (for altitude less than 950 m or 3117 ft)	10°C to 35°C (50°F to 95°F) with no direct sunlight on the equipment.
Fresh air	For information about fresh air, see Expanded Operating Temperature section.
Maximum temperature gradient (operating and storage)	20°C/h (36°F/h)

Appendix B. Standards compliance

The system conforms to the following industry standards.

Table 30. Industry standard documents

Standard	URL for information and specifications
ACPI Advance Configuration and Power Interface Specification, v2.0c	https://uefi.org/specsandtesttools
Ethernet IEEE 802.3-2005	https://standards.ieee.org/
HDG Hardware Design Guide Version 3.0 for Microsoft Windows Server	microsoft.com/whdc/system/platform/pcdesign/desguide/serverdg.mspx
IPMI Intelligent Platform Management Interface, v2.0	intel.com/design/servers/ipmi
DDR4 Memory DDR4 SDRAM Specification	jedec.org/standards-documents/docs/jesd79-4.pdf
PCI Express PCI Express Base Specification Rev. 2.0 and 3.0	pcisig.com/specifications/pciexpress
PMBus Power System Management Protocol Specification, v1.2	http://pmbus.org/Assets/PDFS/Public/PMBus_Specification_Part_I_Rev_1-1_20070205.pdf
SAS Serial Attached SCSI, v1.1	http://www.t10.org/
SATA Serial ATA Rev. 2.6; SATA II, SATA 1.0a Extensions, Rev. 1.2	sata-io.org
SMBIOS System Management BIOS Reference Specification, v2.7	dmtf.org/standards/smbios
TPM Trusted Platform Module Specification, v1.2 and v2.0	trustedcomputinggroup.org
UEFI Unified Extensible Firmware Interface Specification, v2.1	uefi.org/specifications
USB Universal Serial Bus Specification, Rev. 2.0	usb.org/developers/docs

Appendix C Additional resources

Table 31. Additional resources

Resource	Description of contents	Location
Installation and Service Manual	This manual, available in PDF format, provides the following information: • Chassis features • System Setup program • System messages • System codes and indicators • System BIOS • Remove and replace procedures • Troubleshooting • Diagnostics • Jumpers and connectors	Dell.com/Support/Manuals
Getting Started Guide	This guide ships with the system, and is also available in PDF format. This guide provides the following information: • Initial setup steps • Key system features • Technical specifications	Dell.com/Support/Manuals
Rack Installation Instructions	This document ships with the rack kits, and provides instructions for installing a server in a rack.	Dell.com/Support/Manuals
Information Update	This document ships with the system, is also available in PDF format online, and provides information on system updates.	Dell.com/Support/Manuals
System Information Label	The system information label documents the system board layout and system jumper settings. Text is minimized due to space limitations and translation considerations. The label size is standardized across platforms.	Inside the system chassis cover
Quick Resource Locator (QRL)	This code on the chassis can be scanned by a phone application to access additional information and resources for the server, including videos, reference materials, service tag information, and Dell EMC contact information.	Inside the system chassis cover
Energy Smart Solution Advisor (ESSA)	The Dell EMC online ESSA enables easier and more meaningful estimates to help you determine the most efficient configuration possible. Use ESSA to calculate the power consumption of your hardware, power infrastructure, and storage.	Dell.com/calc

Appendix D. Support and deployment services

ProDeploy Enterprise Suite and Residency Services

ProDeploy Enterprise Suite gets your server out of the box and into optimized production—fast. Our elite deployment engineers with broad and deep experience utilizing best-in-class processes along with our established global scale can help you around the clock and around the globe. From simple to the most complex server installations and software integration, we take the guess work and risk out of deploying your new server technology.

		Basic Deployment	ProDeploy	ProDeploy Plus
Pre-deployment	Single point of contact for project management		•	In-region
	Site readiness review		•	•
	Implementation planning		•	•
	Technology Service Manager (TSM) engagement for ProSupport Plus entitled devices			•
Deployment	Deployment service hours	Business hours	24x7	24x7
	Onsite hardware installation*	•	•	•
	Packaging materials disposal	•	•	•
	Install and configure system software		•	Onsite
	Project documentation with knowledge transfer		•	•
Post-deployment	Deployment verification		•	•
	Configuration data transfer to Dell EMC technical support		•	•
	30-days of post-deployment configuration assistance			•
	Training credits for Dell EMC Education Services			•

Figure 15. ProDeploy Enterprise Suite capabilities

 **NOTE:** Hardware installation not applicable on selected software products.

ProDeploy Plus

From beginning to end, ProDeploy Plus provides the skill and scale needed to successfully execute demanding deployments in today's complex IT environments. Certified Dell EMC experts start with extensive environmental assessments and detailed migration planning and recommendations. Software installation includes set up of most versions of Dell EMC SupportAssist and OpenManage system management utilities. Post-deployment configuration assistance, testing, and product orientation services are also available.

ProDeploy

ProDeploy provides full service installation and configuration of both server hardware and system software by certified deployment engineers including set up of leading operating systems and hypervisors as well as most versions of Dell EMC SupportAssist and OpenManage system management utilities. To prepare for the deployment, we conduct a site readiness review and implementation planning exercise. System testing, validation, and full project documentation with knowledge transfer complete the process.

Basic Deployment

Basic Deployment delivers worry-free professional installation by experienced technicians who know Dell EMC servers inside and out.

Residency Services

Residency Services helps customers transition to new capabilities quickly with the assistance of on-site or remote Dell EMC experts whose priorities and time you control. Residency experts can provide post implementation management and knowledge transfer related to a new technology acquisition or day-to-day operational management of the IT infrastructure.

Deployment services

Deployment services details and exceptions can be found in service description documents at the Enterprise Configuration and Deployment page on [Dell.com](https://www.dell.com).

Remote Consulting Services

When you are in the final stages of your PowerEdge server implementation, you can rely on Dell EMC Remote Consulting Services, and our certified technical experts to help you optimize your configuration with best practices for your software, virtualization, server, storage, networking, and systems management.

Data Migration Service

Protect your business and data with our single point of contact to manage your data migration project. Your project manager will work with our experienced team of experts to create a plan using industry-leading tools and proven processes based on global best practices to migrate your existing files and data so your business system get up and running quickly and smoothly.

ProSupport Enterprise Suite

With Dell EMC ProSupport Services, we can help you keep your operation running smoothly, so you can focus on running your business. We will help you maintain peak performance and availability of your most essential workloads. Dell EMC ProSupport is a suite of support services that enable you to build the solution that is right for your organization. Choose support models based on how you use technology and where you want to allocate resources. From the desktop to the data center, address everyday IT challenges, such as unplanned downtime, mission-critical needs, data and asset protection, support planning, resource allocation, software application management and more. Optimize your IT resources by choosing the right support model.

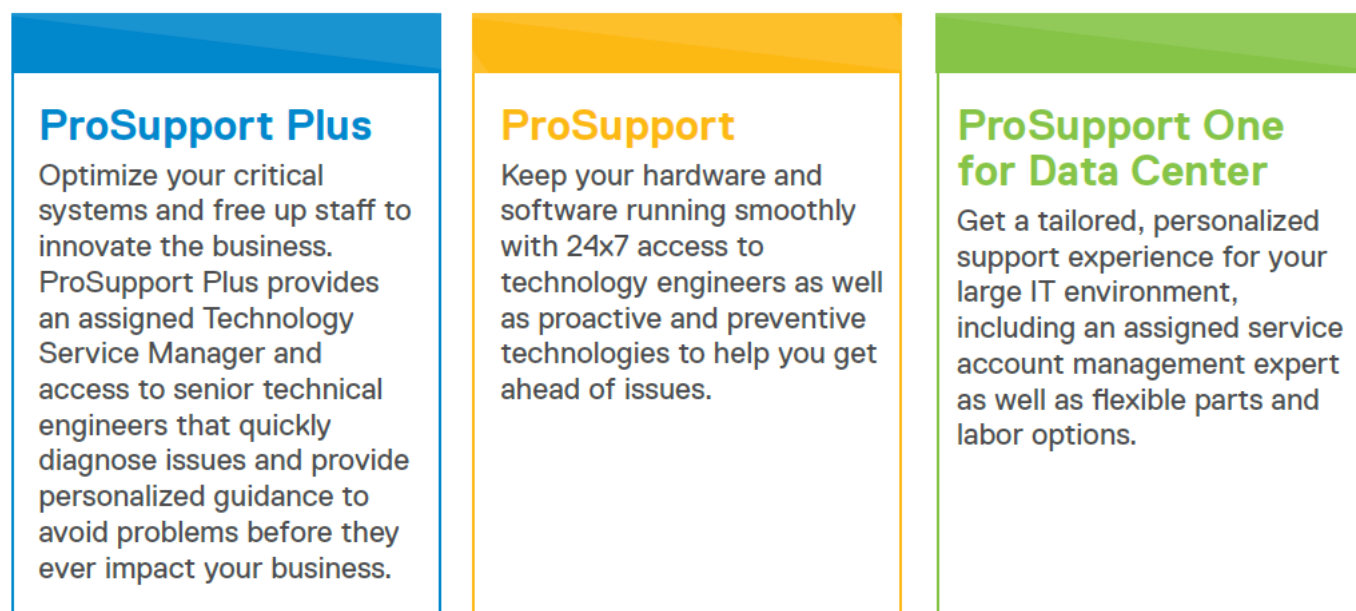


Figure 16. ProSupport Enterprise Suite

ProSupport Plus

When you purchase PowerEdge servers, we recommend ProSupport Plus, our proactive and preventative support, for business-critical systems. ProSupport Plus provides all the benefits of ProSupport, plus the following:

- An assigned Technology Service Manager who knows your business and your environment
- Access to senior ProSupport engineers for faster issue resolution
- Personalized, preventive recommendations based on analysis of support trends and best practices from across the Dell EMC customer base to reduce support issues and improve performance
- Predictive analysis for issue prevention and optimization enabled by SupportAssist
- Proactive monitoring, issue detection, notification and automated case creation for accelerated issue resolution enabled by SupportAssist
- On-demand reporting and analytics-based recommendations enabled by SupportAssist and TechDirect

ProSupport

Our ProSupport service offers highly trained experts around the clock and around the globe to address your IT needs. We will help you minimize disruptions and maximize availability of your PowerEdge server workloads with:

- 24x7x365 access to certified hardware and software experts
- Collaborative 3rd party support
- Hypervisor and OS support
- Consistent level of support available for Dell EMC hardware, software and solutions
- Onsite parts and labor response options including next business day or four-hour mission critical

ProSupport One for Data Center

ProSupport One for Data Center offers flexible site-wide support for large and distributed data centers with more than 1,000 assets. This offering is built on standard ProSupport components that leverage our global scale but are tailored to your company's needs. While not for everyone, it offers a truly unique solution for Dell EMC's largest customers with the most complex environments.

- Team of assigned Technology Services Managers with remote, on-site options
- Assigned ProSupport One technical and field engineers who are trained on your environment and configurations
- On-demand reporting and analytics-based recommendations enabled by SupportAssist and TechDirect
- Flexible on-site support and parts options that fit your operational model
- A tailored support plan and training for your operations staff

Enterprise Support Services Feature Comparison

	ProSupport	ProSupport Plus	ProSupport One for Data Center
Remote technical support	24x7	24x7	24x7
Onsite support	Next business day or Mission Critical	Next business day or Mission Critical	Flexible
Automated issue detection and case creation	●	●	●
Self-service case initiation and management	●	●	●
Hypervisor, Operating Environment Software and OS support	●	●	●
Priority access to specialized support experts		●	●
Designated Technology Service Manager		●	●
Personalized assessments and recommendations		●	●
On-demand support and utilization reports		●	●
Systems Maintenance guidance		Semiannual	Optional
Designated technical and field support teams			●

Figure 17. ProSupport One for Data Center model

ProSupport One for Data Center

ProSupport One for Data Center offers flexible site-wide support for large and distributed data centers with more than 1,000 assets. This offering is built on standard ProSupport components that leverage our global scale but are tailored to your company's needs. While not for everyone, it offers a truly unique solution for Dell EMC's largest customers with the most complex environments.

- Team of assigned Technology Services Managers with remote, on-site options
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- On-demand reporting and analytics-based recommendations enabled by SupportAssist and TechDirect
- Flexible on-site support and parts options that fit your operational model
- A tailored support plan and training for your operations staff

	ProSupport	ProSupport Plus	ProSupport One for Data Center
Remote technical support	24x7	24x7	24x7
Parts and labor response options	Next business day or Mission Critical	Next business day or Mission Critical	Flexible
Automated issue detection and case creation	•	•	•
Self-service case initiation and management	•	•	•
Hypervisor and OS support	•	•	•
Priority access to specialized support experts		•	•
Designated Technology Service Manager		•	•
Personalized assessments and recommendations		•	•
On-demand support and utilization reports		•	•
Systems Maintenance guidance		Semiannual	Optional
Designated technical and field support teams			•

Figure 18. Enterprise Support feature comparison

Support Technologies

Powering your support experience with predictive, data-driven technologies.

SupportAssist

The best time to solve a problem is before it happens. The automated proactive and predictive technology SupportAssist* helps reduce steps and time to resolution, often detecting issues before they become a crisis. Benefits include:

- Value - SupportAssist is available to all customers at no additional charge.
- Improve productivity - replace manual, high-effort routines with automated support.
- Accelerate time to resolution - receive issue alerts, automatic case creation and proactive contact from Dell EMC experts.
- Gain insight and control - optimize enterprise devices with on-demand ProSupport Plus reporting in TechDirect and get predictive issue detection before the problem starts.

SupportAssist is included with all support plans but features vary based on service level agreement.

	Basic Hardware Warranty	ProSupport	ProSupport Plus
Automated issue detection and system state information collection	•	•	•
Proactive, automated case creation and notification		•	•
Predictive issue detection for failure prevention			•
Recommendation reporting available on-demand in TechDirect			•

Figure 19. SupportAssist model

Get started at Dell.com/SupportAssist

TechDirect

Boost your IT teams productivity when supporting Dell EMC systems. With over 1.4 million self-dispatches processed each year, TechDirect has proven its effectiveness as a support tool. You can:

- Self-dispatch replacement parts
- Request technical support
- Integrate APIs into your help desk

Or, access all your Dell EMC certification and authorization needs. Train your staff on Dell EMC products as TechDirect allows you to:

- Download study guides
- Schedule certification and authorization exams
- View transcripts of completed courses and exams

Register at techdirect.dell.com

Additional professional services

Dell Education Services

Dell Education Services offers the PowerEdge server training courses designed to help you achieve more with your hardware investment. The curriculum is designed in conjunction with the server development team, as well as Dell EMC's technical support team, to ensure that the training delivers the information and practical, hands-on skills you and your team need to confidently manage and maintain your Dell EMC server solution. To learn more or register for a class today, visit LearnDell.com/Server.

Dell EMC Global Infrastructure Consulting Services

Dell EMC Global Infrastructure Consulting Services use skilled solution architects, innovative tools, automated analysis and Dell EMC's intellectual property to give rapid insight into the root causes of unnecessary complexity. We seek better answers than traditional service models, and our strategy is to help quickly identify high-impact, short-duration projects that deliver return on investment (ROI) and free up resources. The results are practical, action-oriented plans with specific, predictable, measurable outcomes. From data center optimization to server virtualization to systems management, our consulting services can help build a more efficient enterprise.

Dell EMC Managed Services

Dell EMC Managed Services are a modular set of lifecycle services designed to help you automate and centrally configure, deploy, and manage your day-to-day data center operations. These services extend your existing on-premise IT infrastructure with off-premise cloud services designed to better address challenges with mobility, highly distributed organizations, security, compliance, business continuity, and disaster preparedness.